LA-UR-04-0902

MCNPX Guarantee

MCNPX is a quality production code and is guaranteed with cash awards[1]. Even the Beta test versions on the MCNPX website are guaranteed. Awards range from $2 - $20. Very few problems have been found with new capabilities put into MCNPX (the $20 awards.) Most problems (the $2 awards) have been long-standing minor errors uncovered in the older constituent codes of MCNPX.

Summary of $20 MCNPX Cash Awards

1. Cross section plot failure (MCNPX2.4.d). The first nuclide for any particle type was omitted from material cross section plots. $20 to Roger Hill, P-23, LANL (D-10:JSH-2001-09) 11/07/01
2. Built-in dose functions failed (MCNPX2.4.j). $20 Yuri Franken, Eindhoven University of Technology, Netherlands (D-10:JSH-2002-06) 04/12/02
3. Log interpolation on data cards required lower case "log" (MCNPX2.4.j). $20 to Dick Olsher, LANL HSR-4 (D-10:JSH-2002-07) 04/25/02.
4. Light-ion proton recoil failed with free gas thermal treatment (MCNPX2.5.a). $20 to Tom McLean, LANL HSR-4 (D-10:JSH-2002-101) 08/08/02
5. Preliminary MCNPX25B mix/match would not allow photonuclear production for nuclides not in gdr.dat list , particularly ^{1}H. $20 to Holly Trellue, LANL D-10) (D-10:JSH-2003-020) 11/26/02.
6. Light-ion recoil biasing caused wrong weights/answers (MCNPX2.5.b). $20 to Martyn Swinhoe, LANL, NIS-5 (D-10:JSH-2003-030) 01/15/03
7. Light-ion recoil energy off by factor of atomic weight ratio (MCNPX2.5.b). $20 to Martyn Swinhoe, LANL, NIS-5 (D-10:JSH-2003-034) 02/03/03
8. Improper normalization of KCODE and SSR MDATA binary files for mesh tallies (MCNPX2.5.b). $20 to Bernard Verboomen, SCK-CEN, Mol, Belgium (D-10:JSH-2003-036) 02/13/03
9. Typographical error in warning message. $20 to Steven C. van der Marck, NRG, Petten, The Netherlands (D-5:JSH-2003-052) 06/16/03
10. Inadequate storage for lattice fill card can cause crash. $20 to Miguel Embid Segura, CIEMAT, Madrid, Spain (GWM) (D-5:JSH-2003-068) 07/14/03
11. Spontaneous fission error when used as multiple source particle. $20 to Martyn Swinhoe, LANL, NIS-5 (D-5:JSH-2003-110) 09/26/03
12. SDEF PAR=d fails in MCNPX2.5.e (thinks d is a distribution). $20 to Laurent Bourgois, CEA Saclay, France (D-5:JSH-2004-036) 03/19/04

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[1] Cash Award Fine Print: Offer subject to cancellation or modification without notice. A bug is defined as an error in the source code that we choose to correct. We make awards even for the most trivial or insignificant of problems, but not for proposed code enhancements or proposed extended capabilities. Awards are given only to the first MCNPX user reporting a problem. Reported problems must be reproducible and awards are paid when the correction is integrated into a forthcoming MCNPX version. We believe MCNPX and its predecessor codes are the most error-free and robust Monte Carlo radiation transport capabilities available. We challenge you to find a bug!

13. A delayed neutron was incorrectly created when the prompt neutron fission multiplicity is less than zero (rare case). Occurs only when analog delayed neutrons and fission multiplicity both on (PHYS:N 3J –1 J –1). €20 to Steven van der Marck, NRG, Petten, Netherlands (D-5:JSH-2004-084) 06/04/04

Summary of $2 MCNPX Cash Awards

1. Bad indexing caused errors if the exponential transform was used in a problem where particles get lost or had other "bad trouble" in MCNP4C. $2 to Steven C. van der Marck, NRG, Petten, Netherlands (D-10:JSH-2001-007)10/31/01
2. Delayed neutron data could overwrite unresolved data when both were used in MCNP4C. $2 to Alfred Hogenbirk, NRG, Petten, Netherlands (D-10:JSH-2001-154) 10/31/01
3. Plots of superimposed weight window mesh did theta backwards for cylindrical meshes in MCNP4C2. $2 to John Wagner, ORNL (D-10:JSH-2002-37) 03/19/02
4. imp:a for particles > h failed on cell cards. Also, imp:x,x,x failed for more than 3 particle types (MCNPX2.4.j). $2 to Eric Williams, Raytheon, Tucson, AZ. (D-10:JSH-2002-05, D-10-02-48) 04/11/02
5. There were spurious lines in postscript geometry plot files (MCNP4C). $2 to Alfred Hogenbirk, NRG, Netherlands. (D-10:JSH-02-083) 7/1/02
6. Mesh tallies required 2 spaces between some entries (MCNPX2.5.b). $2 to Steven J. Grammel, ANL (D-10:JSH-02-097) 07/05/02
7. If sdef repeated structures cell specification did not start at lev=0, code crashed (MCNP4C3). 2 euros to Marc Brenneisen, Schwetzingen, Germany (D-10:JSH-03-019) 12/5/02
8. WWINP file could not be read if ipt>7 data on it (MCNPX2.5.b). $2 to David Lawrence, LANL, NIS-1 (D-10:JSH-2003-029) 12/23/02
9. LEB parameters such as EHIN cannot be increased correctly for CEM. $2 to Paul Goldhagen, USDOE/EML, New York (D-10:JSH-03-015, 3/20/03)
10. Two (unused and harmless) parameters incorrectly set in CEM cdouble.h include. $2 awarded to Tom Jordan, EMPC, Gaithersburg, MD (D-5:JSH-2003-032) (FXG) 04/17/03
11. Heating tally contributions by antineutrons and antiprotons in the data table energy range incorrect. $2 awarded to Martyn Swinhoe, LANL NIS-5. (D-5:JSH-2003-36) 04/19/03
12. Tiny time cutoffs caused bad trouble “event distance = zero” termination. $2 awarded to Kin Yip, BNL. (D-5:JSH-2003-037) 04/19/03
13. MCNP attempts to calculate volumes for point detectors and not for IPT > 3. $2 awarded to Anthony Zukaitis, Bechtel Nevada – LAO. (GWM) (D-5:JSH-2003-065) 7/9/03
14. Array overflow for detectors in rare cases. $2 awarded to Edward J. Waller, University of Ontario Institute of Technology, Oshawa, Ontario, Canada (GWM) (D-5:JSH-2003-069) 07/14/03
15. DXTRAN occasionally fails in repeated structures. $2 awarded to David J. Lawrence, LANL, NIS-1. (GWM) (D-5:JSH-2003-088) 08/18/03

16. INCL4 roundoff errors cause crash. $2 awarded to Dick Olsher, LANL HSR-4. (D-5:JSH-2003-109) 9/26/03
17. Periodic boundaries can fail when there are unused duplicate or macrobody surfaces. $2 awarded to Adam Libal, Westinghouse, Sweden (D-5:JSH-2003-111) 9/26/03
18. Extremely low-energy errors cause crash in INCL4 and ABLA physics models. $2 awarded to Robin Klein Meulekamp, NRG, Netherlands (D-5:JSH-2003-112) 9/26/03
19. A fatal error occurred if an MX card was specified for a material not used in the problem. $2 award was made to Paul Bailey, DOE/EML (D-5:JSH-2003-114) 10/2/03.
20. Mesh tallies crash sometimes if the 1st two PRDMP entries are not the same. $2 awarded to Ian Smith, University of Liverpool, UK (D-5:JSH-2003-115) 10/2/03
21. PTRAC cell/surface numbers are wrong with cell/surface flagging. $2 awarded to Valery Taranenko, GSF, Germany (D-5:JSH-2003-127) 11/6/03
22. User input of invalid ZAID can cause PC crash. $2 to Paul Goldhagen, USDOE/EML, New York (D-10:JSH-03-128) 11/07/03
23. TR cards with macrobody surfaces can cause an array overflow. $2 awarded to Kin Yip, BNL. (D-5:JSH-2003-148) 11/24/03
24. Failure to generate weight windows for charged particles. $2 awarded Ken Burns, ENEA, Bologna, Italy. (D-5:JSH-2003-149) 12/01/03
25. Infinite loop if time cutoffs are different for different particles. $2 awarded Fan Lei, QinetiQ, Farnborough, UK. (D-5:JSH-2003-154) 12/04/03
26. GRIDCONV would crash or worse if maximum contour > 10. $2 awarded Seiki Ohnishi, National Maritime Research Institute, Japan. (D-5:JSH-2003-159) 12/11/03
27. An EXPIRE termination saying “wrong material number” could falsely occur in rare cases for electrons below the energy cutoff. $2 awarded Yuri Franken, Eindhoven University of Technology, Netherlands. (D-5:JSH-2003-163) 12/16/03
28. Incorrect electron angular distributions. $2 awarded Paul Bailey, DOE/EML. (D-5:JSH-2004-044) (GWM) 03/30/04
29. KCODE with lattices, mode n d, and print 128 crashes – universe map cannot handle more than mode n,p,e. $2 awarded Tak Pui Lou, LBL. (D-5:JSH-2004-074) (GWM) 5/27/04